

REMARKS

Applicant hereby responds to the final Office Action of October 17, 2007, in the above-referenced patent application. Applicant thanks the Examiner for carefully considering the application, for allowing claims 15, 16, 18, 20, 35, 36, 38 and 40, and for indicating that claims 3 and 23 contain allowable subject matter.

Finality of the Office Action

The instant Office Action (page 10, lines 2-8) asserts that the new grounds of the rejections as set forth in the instant Office Action were necessitated by Applicant's amendments to claims 1 and 23. More specifically, the instant Office Action suggests that the claim amendments, "calculating a different weighting coefficient for the output of each filter by estimating ~~the image~~ a high frequency level at the interpolated selected image position[[s]] and calculating the weighting coefficients based on the estimated image high frequency level," necessitated new interpretations of the claims. In particular, the "selected image position," which was previously interpreted as being the position of the original image to be interpolated, is now interpreted as that the high frequency level is *measured* once the image is interpolated.

Applicant respectfully disagrees with the instant Office Action's interpretations of the claim language, in its original form or after being amended. As Applicant has previously stated, such amendments were merely correcting minor informalities. More specifically, in step "(c)" the "selected image position" first appears in step "(c)" of claim 1: "(c) interpolating a selected image position in the image." The claim language, "at the interpolated selected image position[[s]]," refers to the same image position with or without the amendment. That is, even without the amendment, because of the limitation (c), the selected image position would have been the same "interpolated selected image position." Thus, the claim amendments did not change the scope of the claims, and should not be considered as raising new issues as asserted in the instant Office Action. Accordingly, withdrawal of the finality of the instant Office Action is respectfully requested.

Status of Claims

Claims 1, 3-21 and 23-40 are currently pending. By way of this reply, claims 3 and 23 have been rewritten in independent form. Thus, claims 1, 3, 15, 18, 20, 21, 23, 35, 38, and 40 are independent.

Claims 1, 4-11, 21 and 24-31 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,424,749 ("Zhu") in view of U.S. Patent No. 5,327,257 ("Hrytzak"). Claims 12-14 and 32-34 were rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu in view of Hrytzak, and further in view of U.S. Patent Application Pub. No. 20020067862 ("Kim").

Allowable Subject Matter

Claims 3 and 23 were deemed allowable if rewritten in independent form, including all the limitations of their base claims and any intervening claims. By way of this reply, claims 3 and 23 have been rewritten in independent form, and thus are in condition for allowance.

Rejections under 35 U.S.C. § 103

Claims 1, 4-11, 21 and 24-31

Rejection of claims 1, 4-11, 21 and 24-31 is respectfully traversed because for at least the following reasons, Zhu and Hrytzak, whether considered separately or in combination, fail to show or suggest all of the claimed limitations.

The claimed invention is directed to image interpolation. Independent claims 1 and 21 each require, in part, "calculating a different weighting coefficient for the output of each filter by estimating the image high frequency level at the interpolated selected image position, and calculating the weighting coefficients based on the estimated image high frequency level." Zhu and Hrytzak, by contrast, fail to show or suggest at least these claimed limitations.

The instant Office Action (page 3, lines 8-11) agrees that the above-mentioned limitations are not disclosed by either Zhu or Hrytzak. However, on page 4, lines 8-16,

the instant Office Action asserts that the above-mentioned limitation would be obvious to one of ordinary skill in the art. Applicant respectfully disagrees.

Zhu teaches using a first interpolator with a relatively wide passband and a narrow transition band to the stop band, and a second interpolator with a narrower passband and a more gradual transition band (Zhu, Abstract). Further, the teachings of Zhu with respect to the passbands do not teach or suggest obtaining high frequency components as claimed. Even if for the sake of arguments the teachings of Zhu with respect to the passbands somehow imply that the high frequency component can be obtained as asserted by the instant Office Action (which Applicant respectfully traverses), such a high frequency component results from *exact* filtering of the *exact* interpolators. Thus, in contrast to the claimed limitations, Zhu does not teach “estimating the image high frequency level” as claimed, but rather teaches away from such limitations. Similarly, Hrytzak also requires a set of *precalculated* coefficients, and thus also teaches away from the claimed limitations.

In view of the above, Zhu and Hrytzak, whether considered separately or in combination, fail to show or suggest the claimed invention as recited in independent claims 1 and 21 of the present application. In addition, there is no reason, motivation or suggestion to combine Zhu and Hrytzak as both Zhu and Hrytzak teach away from the claimed invention. Thus, independent claims 1 and 21 of the present application are patentable over Zhu and Hrytzak for at least the reasons set forth above. Dependent claims 4-11 and 24-31 are allowable for at least the same reasons. Accordingly, withdrawal of the rejection is respectfully requested.

Claims 12-14 and 32-34

Rejection of claims 12-14 and 32-34 is respectfully traversed because for at least the following reasons, Zhu, Hrytzak, and Kim, whether considered separately or in any combination, fail to show or suggest all of the claimed limitations.

As discussed above, Zhu and Hrytzak fail to show or suggest at least the claimed “calculating a different weighting coefficient for the output of each filter by estimating the image high frequency level at the interpolated selected image position, and

calculating the weighting coefficients based on the estimated image high frequency level,” which are also limitations for dependent claims 12-14 and 32-34. Kim, like Zhu and Hrytzak discussed above, also fails to show or suggest at least the above-mentioned limitations, or to supply that which Zhu and Hrytzak lack. More specifically, Kim is aimed at enhancing a digital image while suppressing undershoots and overshoots, and is completely silent with respect to image interpolation. This is further evident in paragraph [0025] of Kim, where it is clearly shown that the processed image is an $M \times N$ matrix exactly corresponding to the input $M \times N$ image matrix. As there is no “interpolation” involved in Kim, there is no need in Kim to “estimate” a high frequency level. Rather, the high pass filtered pixel values in Kim are *exactly* calculated for existing image positions. Thus, Kim cannot have possibly supplied a motivation to modify Zhu or Hrytzak to supply “estimating” a high frequency level as claimed.

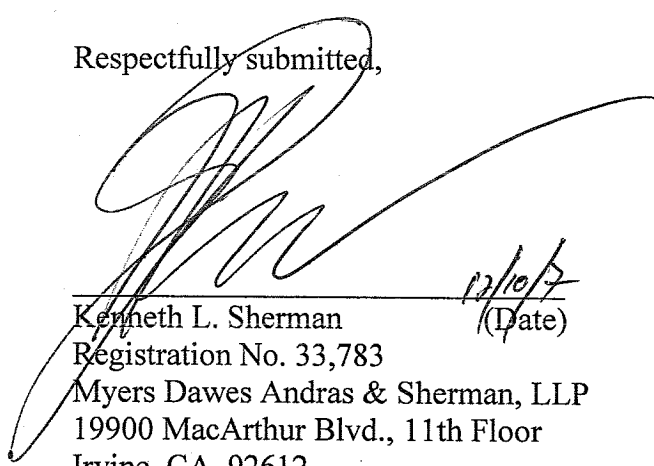
In view of the above, Zhu, Hrytzak, and Kim, whether considered separately or in any combination, fail to show or suggest the claimed invention as recited in claims 12-14 and 32-34 of the present application. In addition, there is no reason, motivation or suggestion to combine Zhu, Hrytzak, and Kim as these references teach away from the claimed invention. Thus, claims 12-14 and 32-34 of the present application are patentable over Zhu, Hrytzak, and Kim for at least the reasons set forth above. Accordingly, withdrawal of the rejection is respectfully requested.

CONCLUSION

In view of the foregoing amendments and remarks, Applicant respectfully requests that the rejections of the claims be withdrawn, and that the case be passed to issue. If the Examiner feels that a telephone interview would be helpful to the further prosecution of this case, Applicants respectfully request that the undersigned attorney be contacted at the listed telephone number.

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Respectfully submitted,



12/10/07
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